

Northumbria Research Link

Citation: Johnson, Derek (2008) Contra crime mapping : spatial and temporal mapping of predicted future crime locations, creating pro-active enforcement and reduction opportunities. In: The Stockholm Criminology Symposium, 16-18 June 2008, Stockholm, Sweden.

URL:

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/id/eprint/2342/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)



Northumbria
University
NEWCASTLE



UniversityLibrary

Spatial & temporal mapping of future
criminal risk as a catalyst for
enforcement & reduction activity

MAPPING THE FUTURE?

Derek Johnson, Northumbria University, England

Background

- ❖ Jan/Feb 2005 analysis identifies near repeat phenomena.
- ❖ Feb/March reduction intervention devised
- ❖ April – reduction intervention begins in pilot areas of town
- ❖ January 2006 – evaluation shows overall reducing levels of burglary crime across the town - additional 6% reduction in intervention areas
- ❖ Near repeat phenomena no longer apparent (i.e. not statistically significant)

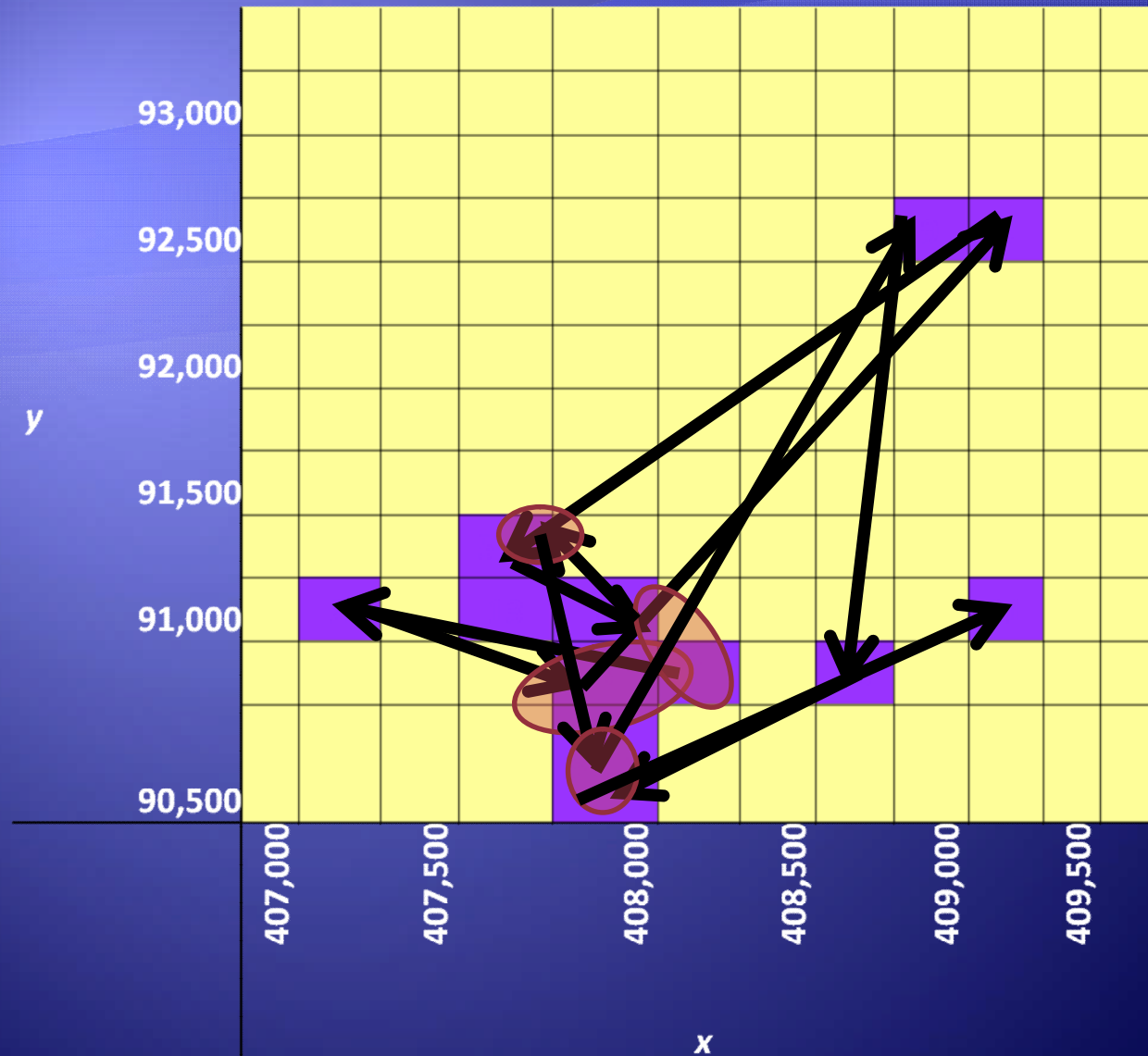
Further thinking

- ❖ Near repeat offences still taking place
- ❖ Serial offenders responsible?
- ❖ Common offenders?
- ❖ Identify & describe personal space-time patterns?
- ❖ Predict future burglary locations?

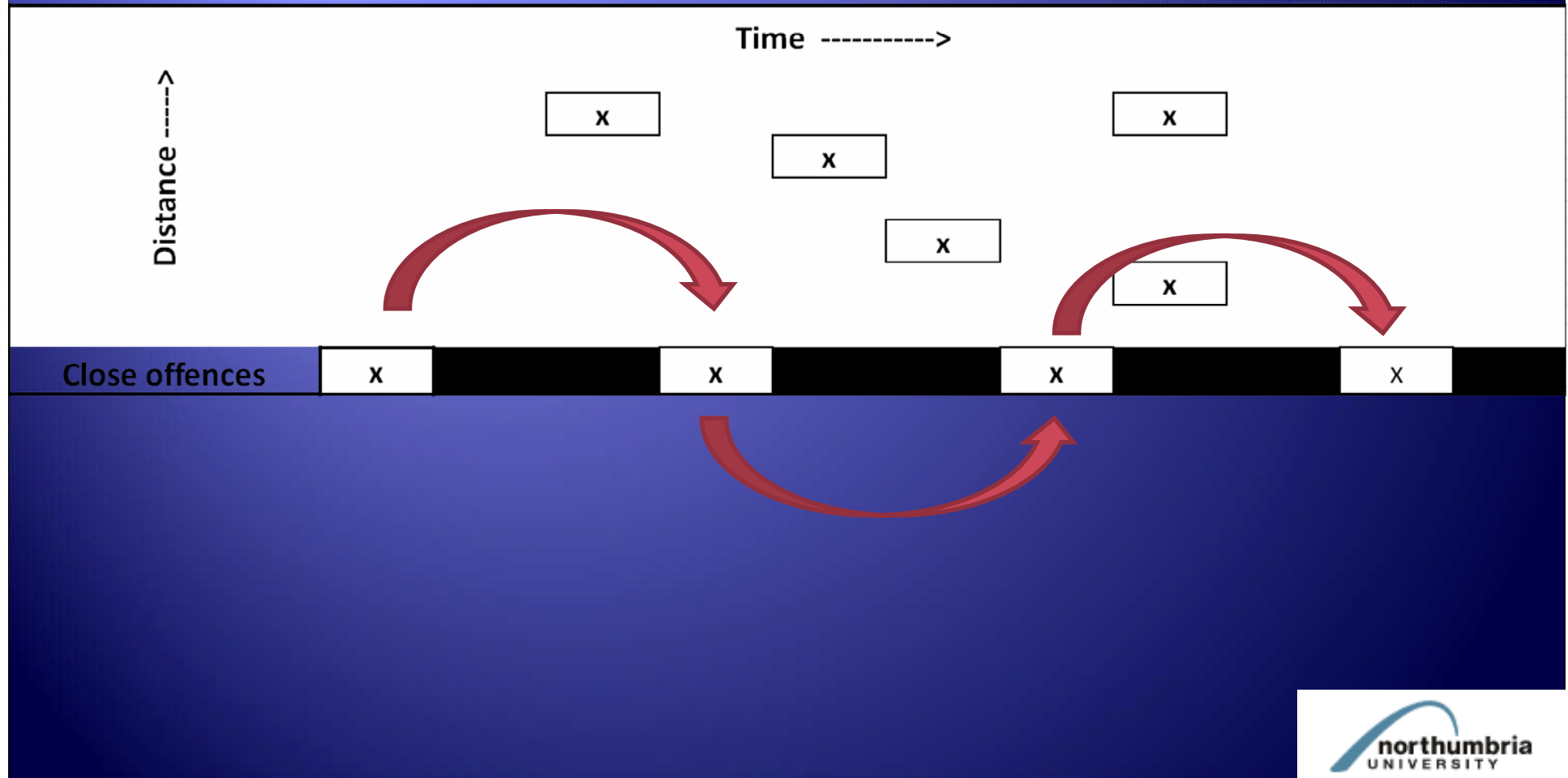
Representations



Short distances

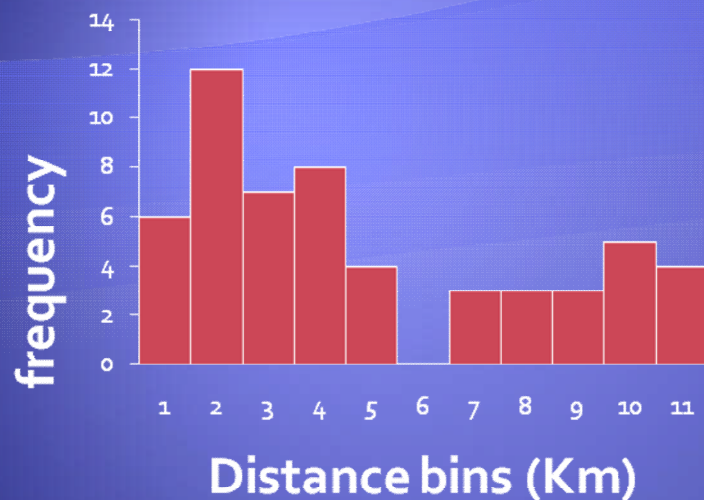


Time lapse

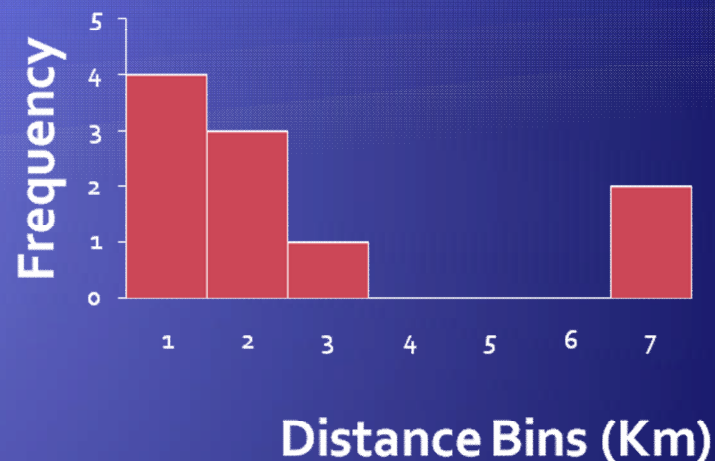


Offender analysis

Histogram of inter event distances

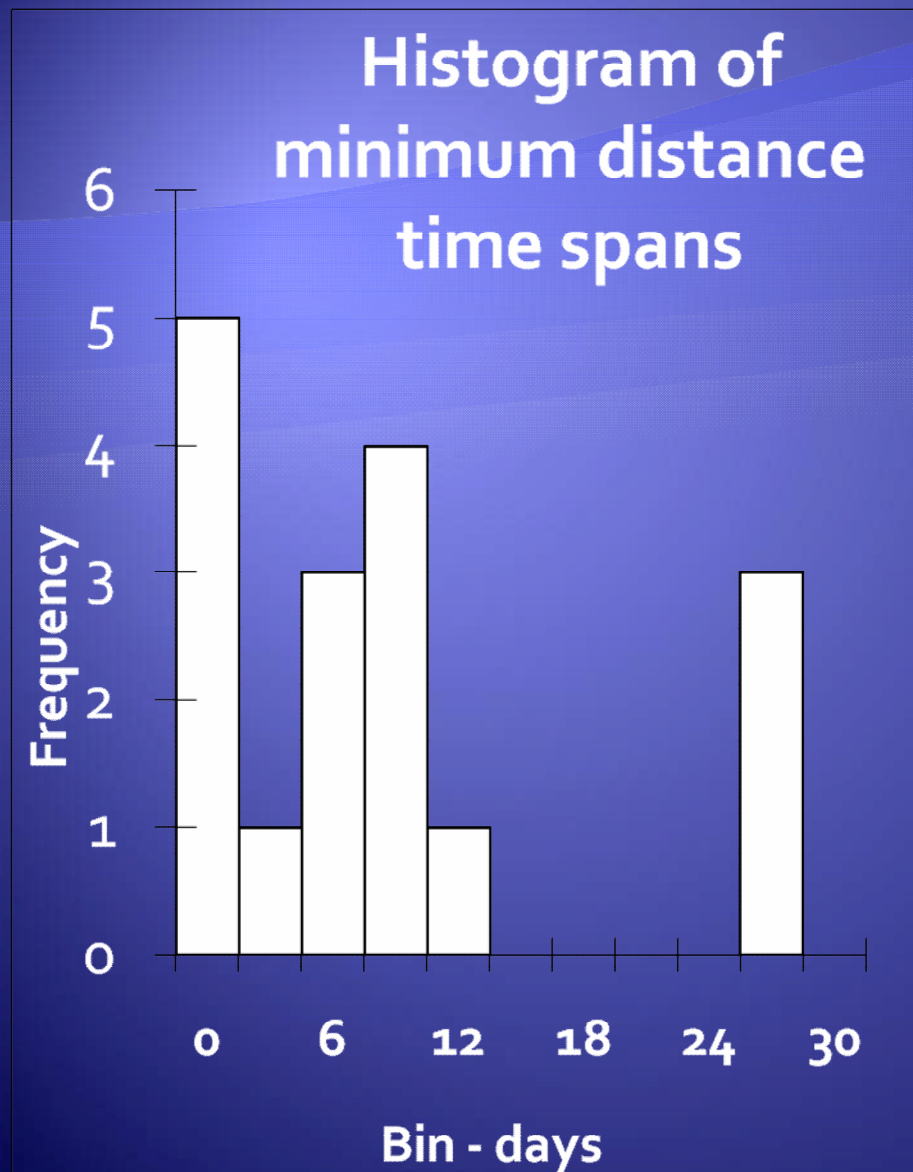


Histogram of future nearest neighbour distances



| | Q1 | Std dev. | Mean | Median | Skew | Range |
|---------------|-------|----------|-------|--------|-------|-------|
| Min. Distance | 0.523 | 2.406 | 2.145 | 1.084 | 1.323 | 6.441 |

Offender analysis - time



| | |
|--------------|-------|
| mean | 6.25 |
| median | 4.50 |
| total days | 40.00 |
| min interval | 1.00 |
| max interval | 21.00 |
| std | 6.30 |
| pskew | 0.83 |
| Quartile 1 | 3.00 |

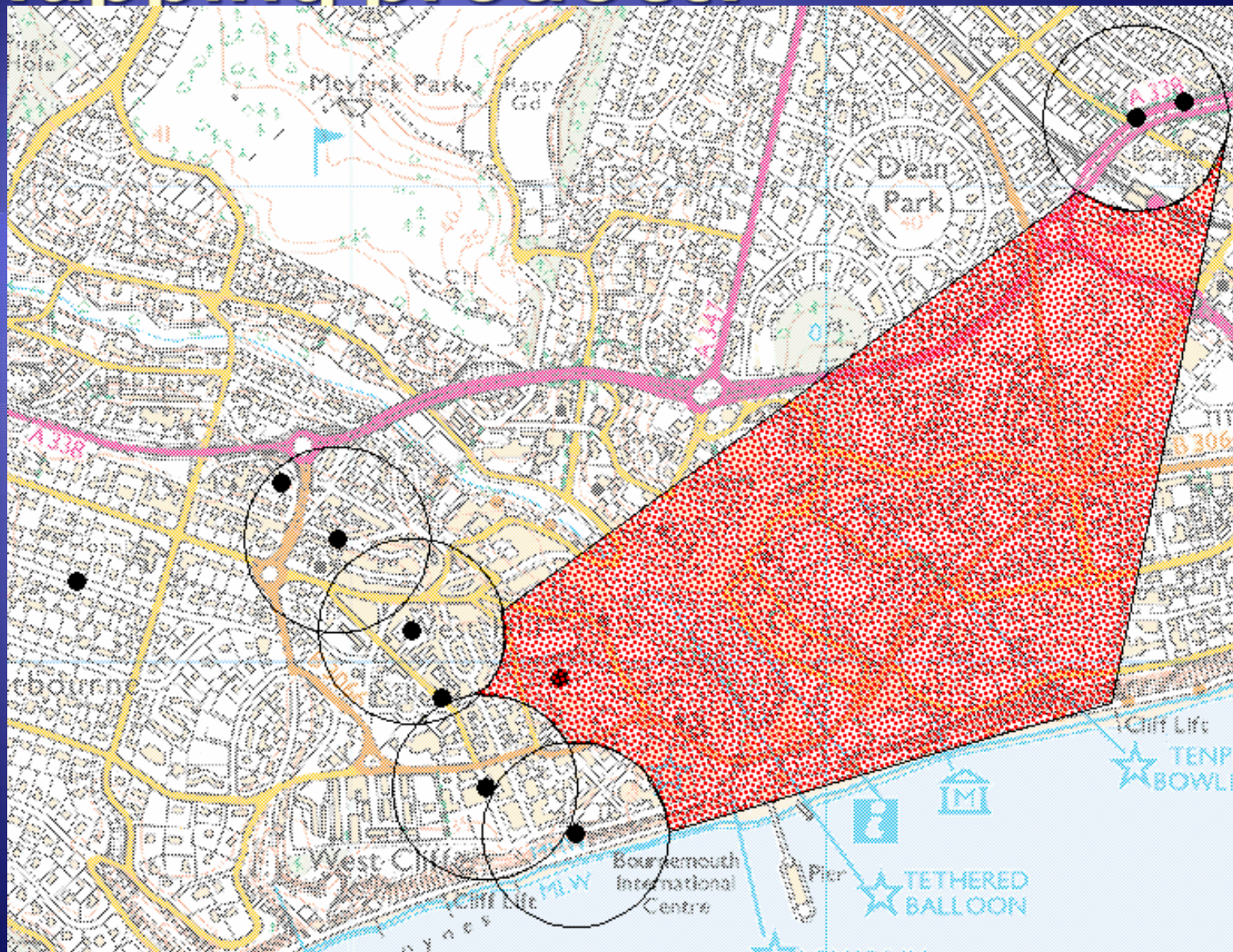
Some research conclusions

- ❖ Serial offenders display 'near repeat' behaviour
- ❖ Serial offenders are consistent over time, particularly with regard to what they consider to be 'close' in distance
- ❖ Time and distance parameters can be calculated for ongoing 'real time' crime series

Mapping product?

| Event | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-------|---|---|---|---|---|---|---|---|---|----|----|
| 1 | | X | | | | | | | | | |
| 2 | | | X | | | | | | | | |
| 3 | | | | X | | | | | | | |
| 4 | | | | | X | | | | | | |
| 5 | | | | | | X | | | | | |
| 6 | | | | | | | X | | | | |
| 7 | | | | | | | | X | | | |
| 8 | | | | | | | | | X | | |
| 9 | | | | | | | | | | X | |
| 10 | | | | | | | | | | | X |
| 11 | | | | | | | | | | | |

Mapping product?



References

Johnson, D. 2008. "The Near repeat burglary phenomenon." in Chainey, S. & Tompson, L. (eds) Crime mapping case studies: practice and research. Chichester: John Wiley & sons .

Johnson, S.D., Bowers, K.J. and Pease, K. 2005. "Predicting the future or summarising the past? Crime mapping as anticipation." in Smith, M., Tilley, N. (eds) Crime Science. New approaches to preventing and detecting crime. Cullompton: Willan Publishing. pp145 - 163.

Levine, N. 2004. "Crimestat: A Spatial Statistics Program for the Analysis of Crime Incident locations." Ned Levine and Associates, Houston TX, and the National Institute of Justice Washington D.C.

Townsley, M., Homel, R., Chaseling, J. 2000. "Repeat Burglary Victimization: Spatial & Temporal Patterns." The Australian & New Zealand Journal of Criminology. v33, 1:pp37-63.

Derek.Johnson@unn.ac.uk

***School of Applied Sciences, Northumbria University,
Newcastle upon Tyne.***